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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,585	10/20/2003	Eric Montfort	Q77958	2460

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
BROADHEAD, BRIAN J	
ART UNIT	**PAPER NUMBER**
3661	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,585	MONTFORT ET AL.	
	Examiner	Art Unit	
	Brian J. Broadhead	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 4 and 16 are objected to because of the following informalities:

2. In claim 4, on line 2, the term "such as" could cause confusion as to the scope of the term elongate members and it is suggested it be removed.

3. In claim 16, to remain consistent on line 1 of the claim, "elongate" should be --elongated--. Appropriate correction is required.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no mention in the original disclosure about the length of the elongate members.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 8, 10, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Heiberg, 5,944,761.

8. As per claim 8, Heiberg discloses a plurality of elongated deployable members on line 35, on column 2; an attitude control system (figure 1) comprising: a gyroscopic actuator that supplies torque to the satellite when the satellite is subjected to a disturbing force or torque on lines 25-55, on column 2; a control system that receives signals representing a current attitude of the satellite and the controls the gyroscope actuator to supply a correction torque based on a difference between the current attitude of the satellite and a predetermined set attitude for the satellite on lines 15-67, on column 2; wherein the gyroscopic actuator is one of a plurality of gyroscopic actuators, each one controlled by the control system to supply torque to maintain the predetermined attitude on line 28, on column 2, the "CMGs" refer to multiple, hence the "s"; the control system comprises an attitude regulation loop, including a corrector such that the bandwidth of the loop contains the lowest and most energetic frequencies of flexible modes of the elongated members and the attitude regulation loop provides a control signal to control the gyroscopic actuators on lines 30-38, on column 2. Since the system discloses controlling vibration from solar panels it must inherently have a bandwidth that contains the lowest and most energetic frequencies of the elongated members. Otherwise, it would not operate correctly.

9. As per claim 10, Heiberg discloses the corrector of the loop is synthesized by means of advanced system control methods in figure 1. The term advanced system

control methods is never clearly defined and reasonable interpretation would include the filter of Heiberg.

10. As per claim 12, Heiberg discloses inherently the way gyroscopes operate. The limitation is a description of how gyroscopic actuators all work.

11. As per claim 13, Heiberg discloses inherently the necessary torque for maintaining the predetermined set attitude is based on the precession tendency of one or more of the gyroscopes. As admitted in the arguments by the Applicant filed on 3-9-06, gyroscopic actuators are known to change the attitude of a satellite through precession.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 4, 6, 14, 15 and 16, are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiberg, 5,944,761.

14. Heiberg discloses the limitations as set forth above with respect to claims 8, 10, 12, and 13. Heiberg does not disclose the satellite is a geostationary satellite or the elongated members have a fixed length. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the invention of Heiberg in a geostationary satellite because geostationary satellites suffer from sudden temperature

variations when appearing from night to day, or day to night as they rotate with the earth and Heiberg provides a way to compensate for the vibrations that can accompany these temperature fluctuations and fixed length elongated or elongate members would be a design choice based on the mission need.

15. Claims 5, 7, 9, and 11, are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiberg, 5,944,761 as applied to claims 4, 8, and 10 above, and further in view of Parvez et al., 6,089,507.

16. Heiberg discloses the limitations as set forth above, and the filter 125 is an attenuation filter. Heiberg does not disclose the corrector is a PID corrector and is associated with an attenuations filter; the advanced control method is one of H-infinity and Linear Matrix Inequality methods. Parvez et al. teaches using H-infinity and PID in attitude control of a satellite on lines 8-16, 45-55, on column 2, lines 8-16, on column 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use and of the control theories of Parvez et al. in the invention of Heiberg because it is a design choice and one of ordinary skill in the art would be readably able to choose a control theory to best match the current situation. For instance, PID is generally simpler to implement but is not as robust as H-infinity.

17. Applicant's arguments filed 11-17-06 have been fully considered but they are not persuasive. The argument that two different embodiments have been used is not convincing because the first embodiment alone reads on the claims and this would be clear to one of ordinary skill in the art, such as the applicant. Applicant's argument concerning lack of inherency is similarly not convincing. The first embodiment discloses

damping solar panels so it is inherent that the low frequencies are included, otherwise the disclosure would not work for its intended purpose. The argument about ωd is specious at best since Heiberg discloses that the gain at the frequency of the disturbance is increased. This is the frequency ωd and could very well be at the lower frequencies. The rest of the graph in 116 also show gain at all frequencies including the lower frequencies, it is not a bandpass filter.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 571-272-6957. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BJB

THOMAS BLACK
SUPERVISORY PATENT EXAMINER